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AUTHOR	Maxwell, Nan L.; Rubin, Victor
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ABSTRACT

The relative impact of career academies on postsecondary educational attainment and knowledge and skills acquired in urban public high schools was examined through an analysis of single-district and national databases. The national data were obtained from the first and third follow-up surveys of the National Education Longitudinal Study. Compared with the students in the national sample, students in the single-district sample were less likely to be white (less than 10% versus 44.7%), more likely to receive free lunches (40% versus 28%), and more likely to have limited English proficiency (more than 25% versus 14%). Of the 10,102 students in the single-district sample, 1,257 attended career academies. The data analyses established that, although career academies have the potential for increasing aggregate educational attainment with an impact equal to that of the academic track, career academies may not be equally effective for all students. It was therefore recommended that an array of high school programs be offered to meet the needs of diverse student bodies. (The report contains 23 references. Appended are the following: description of variables; probit estimation of educational attainment; ordinary least square analysis of high school human capital production; and demographic differences identified through probit estimation of educational attainment.) (MN)

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THE RELATIVE IMPACT OF A CAREER ACADEMY ON POST-SECONDARY WORK AND EDUCATION SKILLS IN URBAN, PUBLIC HIGH SCHOOLS

1997

NAN L. MAXWELL, PH.D.
PROFESSOR OF ECONOMICS
CALIFORNIA STATE UNIVERSITY, HAYWARD

AND

VICTOR RUBIN, PH.D.
EXECUTIVE DIRECTOR
UNIVERSITY - OAKLAND METROPOLITAN FORUM

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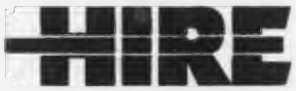

HUMAN INVESTMENT RESEARCH & EDUCATION

School of Business and Economics
California State University, Hayward
Hayward, California 94542-3068

510-885-3191 (voice)
510-885-2602 (fax)

http://www.hire.csuhayward.edu

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NAN L. MAXWELL, PH.D.
DEPARTMENT OF ECONOMICS AND
HUMAN INVESTMENT AND RESEARCH (HIRE) CENTER
CALIFORNIA STATE UNIVERSITY, HAYWARD
HAYWARD, CALIFORNIA 94542

AND

VICTOR RUBIN, PH.D.
INSTITUTE OF URBAN AND REGIONAL DEVELOPMENT
UNIVERSITY OF CALIFORNIA, BERKELEY
BERKELEY, CA 94720

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Abstract

This paper focuses on the relative impact of one type of school-to-work program, the career academy, on educational attainment and knowledge and skills acquired in high school. By comparing the impact of the career academy with the impact of traditional curriculum tracks, we evaluate their potential for improving the post-secondary outcomes of students in urban, public schools. Using both single-district and national (across-district) data bases, we show that the career academy has the potential for increasing aggregate educational attainment with an impact that equals that of the academic track. However, results also show that the career academy may not be equally effective for all students. This suggests that an array of high school programs should be offered to meet the needs of diverse student bodies.

Parents, educators, politicians, and communities in general are becoming increasingly concerned about the failure of the public schools in our cities to provide an adequate education for our children. Although many of today's public, comprehensive high schools were designed to promote unity through their inclusiveness and to allow for individual development through program differentiation (i.e., academic, general, and vocational curricula), many schools fail to meet these challenges.[1] High schools are routinely criticized for their failure to provide students with the knowledge and skills necessary to succeed in either post-secondary education or in the labor market. As labor markets tighten and the premium paid for skills and education increases, the criticism of schools intensifies.

In response, current educational reform efforts blur the century-old idea of program differentiation between academic and vocational education for both motivational and educational reasons. While there are many approaches to integrating existing academic and vocational curricula, virtually all of these approaches have at their core the underlying philosophy of using an occupational focus and workplace context to stimulate academic learning. These "school-to-work" reforms strive to help high school students achieve academically, while providing them with marketable, work-based skills. Desired outcomes include both clear pathways to post-secondary education and productive employment. One of the best-established of these school-to-work models is the career academy, a "school-within-a school" that uses an integrative curriculum focused on a specific career theme.

This study addresses the potential for the career academy to increase education and work place skills within the urban, public school environment. Specifically, we answer the question "Are career academies really better at increasing educational opportunity and workplace skills *as compared to academic and traditional vocational programs*?" By analyzing a detailed data set that contains post-secondary information for general, academic, vocational,

[1] See Conant (1967) for a discussion of the comprehensive high school and Natriello et al. (1990), Louis and Miles (1990), or Gamoran (1996) for a discussion of problems in urban, public high school.

and career academy students from a single public school district and the urban, public school students in the National Education Longitudinal Study (NELS), we show that the career academy increases the probability of attending a two or four year college with an impact equal to that of the academic track. Because the career academy draws students from backgrounds that are typically defined as placing them "at-risk" of school failure, these gains are realized for individuals who are less likely to achieve post-secondary success. However, because this study also shows that career academies may not be as effective as academic programs at increasing educational education for all demographic groups, questions are raised about the universality of program implementation.

FRAMEWORK

Traditional high school programs theoretically differentiate the high school curriculum so that educational resources are tailored to the abilities and plans of students. Students who demonstrate relatively high levels of academic ability and university-oriented post-secondary plans enroll in an academic track. It is the presumption that these students will attend a four-year college or university after high school graduation, hence, the curriculum is designed to provide students with the educational skills necessary for that kind of success. Students with relatively lower levels of academic abilities or with plans to enter the labor market after high school often enroll in the vocational track. It is the presumption that, after high school, these students will enter either the labor market or a relatively specific technical training program that does not require a (four-year) college background. Hence, the traditional vocational curriculum is designed to provide students with the work skills necessary for success. Students without well-defined plans enroll in the less-developed and relatively unstructured general track.

Both the equity and efficacy of traditional curricular "tracks" have fallen under criticism along at least two lines. First, debate exists as to whether abilities and plans are responsible for placing students into curriculum tracks (e.g., Oakes and Guiton, 1995; Lee and Bryk, 1988;

Oakes, 1985; and Alexander and Cook, 1982) or whether tracking exacerbates initial differences among high school students, in part, by affecting students' educational goals and achievements.[2] Second, traditional vocational education is under increasing scrutiny as the labor market increasingly demands "academic" skills such as critical thinking.

In response, schools began to blur the distinction between academic and vocational curriculum by integrating an occupational focus into academic courses. Perhaps the most immediate change was felt when the vocational curriculum as the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 reestablished the commitment to high quality occupational education in high school and expanded the role that post-secondary institutions, particularly community colleges, play in curriculum development (e.g., Office of Educational Research and Improvement, 1994).

However, advocates of these "school-to-work" programs do not see them as simply a revamping of traditional vocational education nor limited to students who would otherwise be in those programs. Instead, most advocates argue that these programs can meet the need for increased academic rigor that was set forth in A Nation at Risk (National Commission on Excellence in Education, 1983). In fact, many of the newer programs place a particular emphasis on establishing connections between high school and community college and many are designed to keep university attendance open as an option for students, even as they pursue the more technical training at community colleges. As such, school-to-work programs seek to develop academic and work-based skills for *all* segments of the student population. If successful, these programs would increase the ability of students who are not in the academic track to attend post-secondary education and would increase the work-based skills of students who are in the academic track.

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[2] For example, an academically-tracked student has an increased probability of applying and being accepted to college, all else equal (Alexander et al., 1978) and high-ability grouped students gain in test scores during high school while low-ability grouped students lose (Kerckhoff, 1986). Mosteller et al. (1996) provide a review.

The career academy is arguably the most well developed school-to-work program model. The career academy builds a "school-within-a-school" and coordinates curriculum and activities around a single occupation, profession, or industry that is in demand in the local labor market. Core academic subjects are integrated with vocational/technical laboratory courses and emphasize the relationship between academics and the work place. Although students do not earn formal occupational skill credentials, they often work in the industry of focus during the summer after their junior year. Employers are actively involved in building curriculum, and in donating time as mentors and work place supervisors. (Stern et al. (1992) provide an overview). Research on career academy programs illustrates their effectiveness at reducing high school dropout rates, increasing post-secondary attendance, (e.g., Kemple and Rock, 1996; Stern, et al., 1988), and improving job performance and work attendance (e.g., Linnehan, 1996).

Unfortunately, because the *relative* efficiency of school-to-work programs has not been evaluated, the merits of the more integrative program as compared to traditional academic and vocational programs are unknown. Because career academies are more expensive to operate (e.g., Stern et al., 1989) than traditional programs, their benefits should be compared to the benefits of traditional academic and vocational programs. Without this perspective, the additional cost of school-to-work programs may not be warranted. For example, what if the educational benefits of career academies cited above resulted not from specific new activities but from simply providing structure to students in previously unstructured situations? If this were the case, the same results could be obtained by providing structure in other ways, still using much of the traditional curriculum, and at less cost than a full-blown academy program.

We empirically examine the relative impact of each of the three traditional curriculum tracks (general, academic, and vocational) and the career academy on educational achievement (high school graduation, 2-year college attendance, and 4-year college attendance) and education and work skills acquired in high school. In our analysis, we explicitly

compare the impact of the career academy on achieving educational achievement with the impact of the more traditional programs. Their positive impact could be shown in one of two ways. First, career academies could increase educational attainment or build knowledge and skills more than traditional curriculums. In this case, the relative merits of the career academy should be measured against its increased costs.

Second, because both the academic and traditional vocational curriculum were designed to meet specific needs of targeted groups of students, career academies could increase the educational attainment and knowledge and skills for students for whom traditional high school programs were not designed (e.g., students in the academic track gain work place skills or students in the vocational track gain academic skills). In this case, the potential for career academies to extend opportunities to select groups of students via a fourth alternative to traditional high school programs for students should be explored.

To estimate the outcomes associate with each high school program, we begin with an educational production function such that:

(1) $Educ = \alpha + \alpha_1 CAREER + \alpha_2 VOC + \alpha_3 ACADEMIC + \Sigma\alpha_j School_j + \Sigma\alpha_k StuChar_k + \Sigma\alpha_l Demo_l$

where:

Educ = a vector of educational outcomes

CAREER = a binary variable indicating a student who was in enrolled in a career academy

VOC = a binary variable indicating a student who was in enrolled in a vocational program

ACADEMIC= a binary variable indicating a student who was in enrolled in an academic program

School = a vector of variables measuring characteristics of the school

StuChar = a vector of control variables measuring student characteristics

Demo = a vector of variables indicating gender, and race/ethnicity.

Because the general track is the omitted high school program variable, α_1, α_2 and α_3 (career academy, vocational, academic) estimate the impact of each structured high school

program on educational outcomes as compared to the unstructured program. Positive and significant coefficients on the program variables (α_1, α_2 and $\alpha_3 > 0$) indicate that the specific program increases educational outcomes *as compared to the general program.* The remaining variables provide statistical controls for both school and individual characteristics.

Unfortunately, data limitations preclude specifying a value-added function, which controls for knowledge and skill levels at high school entrance (e.g., Hanushek, 1986). Because skills at high school entrance are often correlated with high school program, their omission as control measures may overstate the impact of high school program on skills acquired in high school (e.g., Meyer, 1996). To examine for this potential, we analyze the impact of knowledge and skills at high school entrance on high school program such that:

(2) $\text{HSProg} = \beta + \sum \beta_i K\&S_i$

where:

HsProg = the student's high school program (career academy, academic, vocational)

K&S = a vector of variables measuring the knowledge and skills that a student brings to high school.

We are concerned with the correlates of enrollment in each program (i.e., $\beta_i \neq 0$) to determine, most significantly, if students enrolled in a career academy were "creamed". Should program enrollment be positively correlated with knowledge and skills, students enrolled in the program have an above average probability of increasing educational attainment without program intervention (i.e., they are creamed). This would overstate the impact of the high school program on educational outcomes (e.g., Hanushek, 1997). Should program enrollment be negatively correlated with knowledge and skills, "negative" creaming may exist and students enrolled in a program have a below average probability of increased educational attainment, all else equal. Negative creaming understates the impact of the program on educational outcomes because students enter the program with a below average probability of educational success.

DATA AND EMPIRICAL METHODOLOGY

We examine the relative impact of the career academy and more traditional programs on work and education skills using both single-district and national (across-district) data bases of former students in urban, public high schools. The district from which we draw our data is one of the largest in a populous west coast state. It services over 50,000 students in a core central city of a large metropolitan area, and contains six comprehensive high schools.[3] Over 90% of the district's students are ethnic "minorities" (Table 1), over one-quarter have limited English proficiency (LEP), nearly 40% receive free lunches, and the average daily attendance is only slightly over 80%. The student-teacher ratio stands around 28 in the comprehensive high schools. In other words, the district in many ways epitomizes the challenges and difficulties faced by large, *inner city* school districts throughout the nation. In contrast, students in our national sample of urban, public high schools are more white (44.7%), less impoverished (28% receive free lunches), more English proficient (14% LEP), and have higher attendance (91%) and smaller classes (student-teacher ratio of under 20).

Data on the single district are from a post-graduation survey that was mailed to each of the 10,102 students who attended district schools as sophomores from 1990-1993 and district records. We were able to identify 1,257 of these individuals as students as enrolled in a career academy from rosters compiled by the district administration. The remaining students were asked to identify their high school program as part of the survey. The survey was mailed from May to October (with follow-ups lingering through December) of 1996, when the former students were between one and three years out of high school with an on-time graduation.[4] A total of 1,223 surveys were returned. We restricted our sample to individuals who identified their high school program, attended a comprehensive high school, and were not part of "special

[3] Half of the district's high school were configured 9-12 and half were configured 10-12 during the period of study. The district also contained two alternative high schools, two centers for redirection, and one continuation high school. We confine our analysis to students in the six comprehensive high schools.

[4] Only one respondent was still in high school. For a follow-up, each individual was contacted at least twice.

education". The survey was structured around gathering four types of data: post-high school educational and labor market outcomes, expectations about education, labor market and the community; assessment of the high school and program; and general demographic information. Survey design maintained as much overlap with the NELS (the national data set used here) as possible, with over half of the data drawn directly from questions in the NELS data.

This single-district data base contains a large sampling of career academy students as well as students in more traditional high school programs. As a result, we can assess the educational potential of four distinct high school programs: the general (unstructured track), the academic track, the traditional vocational education track and a career academy. Because this single-district data set represents a relatively homogeneous environment (i.e., pupil-teacher ratios, per pupil expenditures, class size and policies and procedures are all relatively constant) the estimated educational benefits associated with each high school program are less likely to reflect spurious correlation. Because these unmeasurables bias the estimates of the impact of high school program on education (Meyer, 1996), the single-district coefficients may better estimate program impacts than the across-district coefficients that are generated with the national data base.

However, the potential cost to using these data may be in generalizing results from its analysis. Because all local districts are unique, estimated relationships between high school program and educational outcomes may reflect idiosyncratic practices, and misrepresent the potential program impact for the nation's students. We use the national data base to ensure that the estimated impact of the high school programs in the single district are similar to those estimated from national sources. Should estimates be similar between the samples, we assume that program impacts from our single-district can be generalized outside the district.

We use the first and third follow-up surveys in the National Education Longitudinal Study (NELS) as our national (across-district) data base. The first follow-up to the NELS sample was

conducted in the spring of 1990, when most of the sample were in 10th grade.[5] This round of surveys included about 18,000 students from over 1,000 schools. The third follow-up to NELS interviewed 16,000 students beginning on September 30, 1994, when most individuals had graduated from high school and were about to enter their adult lives. We restricted the NELS sample to students who were in urban, public schools and who had a defined high school program that was not "special education". There were only about two years difference between the national and single-district data sets with, in both cases, students surveyed about two years out of school.

Both data sets have identical measures of educational achievement that can be used to quantify the educational outcomes examined in equation (1): high school graduation, two-year college attendance, or four-year college attendance. We use these measures to capture educational milestones (i.e., meeting educational benchmarks) and to determine the highest grade that the student attended. Achieving educational benchmarks is a cumulative measure that captures whether a student completed or is progressing toward a particular educational milestone. Thus, for example, the individual who attended a four-year university will be counted as having graduation from high school,[6] attended a two or four-year college, and attended a four-year college. The percentage of individuals will decline as the educational benchmark rises because individuals are included for each educational benchmark that they achieve. We use these measures to assess the relative ability of the career academy to articulate individuals to the next level of education.

The second measure (highest grade completed) captures only the current level of educational attainment. In our example, the individual described above would be included only

[5] For a discussion see, National Center for Education Statistics (1996). The first follow-up included a freshened sample over the base year (1988, when most students were in 8th grade), which was added to achieve a representative sample of the nation's sophomores.

as a respondent with four-year college attendance. Collectively, the percentage of individuals will decline as educational attainment rises because the proportion of individuals who attend a four-year university is lower than the proportion that graduate from high school (for example). We use these measures to assess the relative ability of the career academy to provide students with education and work skills to facilitate success in their current level of education.

These measures capture only one program outcome—educational attainment. We also want to assess the relative impact of career academies on the knowledge and skills acquired in high school. Unfortunately, only the single-district data set has measures of education and work skills that are received in high school. In this data set respondents were asked to "check the box that indicates how well your high school education helped you to..." obtain 13 different work and education related types of knowledge and skills. Respondents were given four options with which to rate their high school program: a great deal, somewhat, a little, or not at all. These measures were specifically designed to capture three sets of qualities: "workplace" skills, "education" skills, and "school-to-work" skills. While many items are relevant to both education and workplace settings, this grouping eases interpretation of results because traditional vocational education programs were designed to facilitate "workplace skills", traditional academic programs were designed to facilitate "education" skills", and the career academy is designed to facilitate all sets of skills.

High school program, the dependent variable in equation (2) and the key independent variable is self defined in both data bases with respondents selecting the best description of their high school program (general high school program; college prep or academic; (specific)

[6] A small percentage (between 3 and 4) of both samples report more than one highest grade attended because dropouts are defined as individuals who did not graduate on time. These individuals are counted as both a dropout and attending a post-secondary college. Our single-district analysis includes 26 such individuals.

vocational, technical or business). Career academy students (in the single-district data base) were identified by the district office and were asked only to name their academy.[7]

The set of control variables only partially overlap in the single-district and national data bases. While both data bases have basic demographic information (gender, race/ethnicity) and home background (native English speaker, family structure at age 14), only the single-district data base controls for attendance in high school and for the specific high school attended. The national data base contains proxies for these measures in the form of school characteristics (average daily attendance, student demographic composition, size, pupil-teacher ratio).

Data limitations create estimation complications for equation (1). Specifically, the measures of achieving educational benchmarks (equation 1) are binary, hence, Ordinary Least Squares (OLS) will produce inefficient estimates of program impacts. We therefore estimate a series of probit analyses for each educational outcome (e.g., high school graduation, two-year college, four-year college) and use estimated probit coefficients to compute the *marginal probability* of achieving educational benchmarks for students enrolled in each high school program.[8] We use OLS to assess the *relative* programmatic impact of career academies, academic and vocational curriculums (α_1, α_2, α_3) on specific knowledge and skill measures. To make direct comparisons between the programs, we use the standardized (for unit variance) coefficients in estimating program impacts on education and work knowledge and skills.

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[7] We define high school graduation as being "on time". If there is switching between programs in high school, the self definition allows the student to select the program that (most probably) had the strongest influence on their post-secondary activities. Because we use the district's definition to define students who are in career academies, there may be students who we define as career academy students for whom the career academy program had minimal influence (e.g., students who were in the program only one semester). The inclusion of students who may have switched out of the career academy will understate the program's impact. The "academy" questionnaire differed from the other questionnaire only in this initial program question and in the addition of four other questions that asked students about components unique to the career academy program.

[8] An ordered probit is not appropriate because individuals can be included on multiple outcomes. The probability is obtained by converting the z score computed from the estimated probit for each educational benchmark. The z value is computed using the mean values on all independent variables and 1 on the relevant program (0 on all program variables for students in the general track). The marginal probability is computed by subtracting the predicted probability for students each track from the predicted probability of students in a general track

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Two complications arise with the estimation of equation (2). First, only about half of the students in the single-district sample took the district-mandated, state-generated achievement tests in their sophomore year (K&S). This greatly reduces the sample available for estimation of equation (2).[9] To compensate, we use proxies for knowledge and skills and estimate:

(2a) $\text{HSProg} = \beta^a + \sum \beta_i^a HSEntrance_i + \sum \beta_k^a Bkgd_k + \sum \beta_l^a Demo_l$

where:

HSEntrance = a vector of variables indicating the sources of advice and information that a student used to select his or her high school program

Bkgd = a vector of variables indicating nondemographic student and home characteristics

Demo = a vector of variables indicating gender, and race/ethnicity.

To verify results using proxy variables for knowledge and skills, we also estimate equation (2) with smaller sample.[10] In both estimations (2 and 2a), the binary, categorical nature of high school program dictates that a multinominal logit maximum likelihood estimation be used to estimate equations (2 and 2a).[11]

Our estimation analysis is grounded in equations (1, 2, 2a) with resultant coefficients interpreted in two ways. First, as described above, because the general high school track is the omitted variable in estimations, the career academy, academic, and vocational coefficients are compared to the general program. Should career academy coefficients be positive and

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[9] Test data were taken from district records. This reduced sample may not reflect the students in the district. As well, the sample may not reflect the proportion of students in each program if their test taking patterns differ. Because 94% of the NELS sample took the achievement test in the sophomore year, the reduced sample bias is less problematic in the national data base.

[10] School characteristics are not included in either estimation because career academies are magnet programs. That is, 25% of students in a career academy in this district can be from outside of the school boundaries. As well, each of the schools in the district contains the full array of high school programs (career academies and traditional curriculum tracks), the school enrollment does not limit program selection.

[11] One assumption of the multinominal logit is that the choice of high school program is independent of irrelevant alternatives. With respect to the choice of the career academy program, our data base allows for an implicit examination of this assumption because the career academy is added as a third alternative among structured high school programs. Since estimates are similar for the within-district (with three structured programs) and the national (with two structured programs) data bases, we support for the independence assumption underlying this technique.

significantly different from 0, we will conclude that the program is more effective than the general track at increasing educational outcomes. Second, we want to study the impact of the career academy *as compared to academic and vocational tracks* we perform t-tests for coefficient differences on all coefficients estimated in the analyses. Specifically, we compare estimated coefficients on the impact of traditional academic and vocational programs with estimated coefficients on the impact of the career academy. Should traditional track coefficients significantly differ from career academy coefficients, we conclude that the program is more effective than vocational or academic programs at increasing educational outcomes.

RESULTS

Estimation of equation (1) to determine the educational outcomes associated with each high school program supports the proposition that the career academy increases the probability of educational attainment than the general and vocational tracks (Table 2). By computing the probability of achieving educational benchmarks for the "average" student, we see that, as compared to students in the general track, students in career academies have an 8.7 percentage point increase in graduation form high school, and 11.6 percentage point increase in attending a two or four year post-secondary institution, and a 17.9 percentage point increase in attending a four year post-secondary institution (i.e., coefficients significantly differ from 0). As well, students in career academies are significantly more likely than students in vocational education to achieve each educational benchmarks (i.e., t-tests for coefficient differences are significant). The insignificant difference between the single-district and national district coefficient estimates for the vocational track suggest that the effectiveness of the career academy as compared to vocational programs may hold outside this district.

The test for coefficient differences suggests that the increased probability of achieving educational benchmarks does not differ between students in career academies and students in the academic track. It therefore appears that the career academy may increase educational

outcomes to a level equivalent to those achieved by students in the track designed to facilitate post-secondary education. Interestingly, the estimated probabilities of attending either a two or four year college or a four-year college differs significantly between the single-district and national samples, in large part because the standard errors on the coefficients are relatively small. (See Appendix Table 2). Marginal probabilities differ significantly for both levels of post-secondary education between students in career academies in the single-district sample and the students in the academic track in the national data base (results not shown). Thus, the relative effectiveness of the career academy, as compared to the academic track, is somewhat ambiguous and deserves more in-depth research.

The career academy not only increases the probability of achieving educational benchmarks as compared to the vocational and general tracks, it also enhances students' flexibility in pursuit of different types of higher education as compared to students in the general track (Table 3). This table shows the standardized OLS coefficients estimated from equation (1) with each of the 13 knowledge and skill measures as the dependent variables. Interestingly, high school program is not correlated with this set of knowledge and skills gained in high school for those students who ended their education at high school (columns 2-4).[12] However, as compared to the general track, both career academy and vocational education programs significantly increase (some) education and school-to-work skills for those students who only attend a two-year college (column 5 and 7). The academic track may be less successful regarding community college attendance, with estimations showing only a few significant correlations with knowledge and skills (column 6). These results are consistent with the career/industry focus in both vocational and career academy programs that emphasizes the benefit of two-year technical training. The academic track has no such emphasis. Both the career academy and academic track increase work, education, and school-to-work knowledge

[12] We are, of course, assuming that the student's rating reflects the program's ability to impact skills. That is, we assume that errors in student assessment are randomly distributed (within and between programs) with a mean of 0.

and skills more than the general track for students who attend a four-year college (column 8 and 9). This is consistent with the academic emphasis in both programs.

We note that only one out of 78 comparisons show significant difference between coefficients estimated for vocational and academic tracks and those estimated for the career academy. This suggests that, although the career academy may increase knowledge and skills over the general track for students in two-year colleges (as does the vocational track) and for students in four-year colleges (as does the academic track), its impact is of equal magnitude to structured tracks. As such, it may be that providing structure, per se, provides the motivation to enhance work and education knowledge and skills in high school.

Thus far, we have shown that the career academy is effective at increasing educational achievements as compared to the general and vocational tracks and effective at increasing work and education skills (for select bodies of students) as compared to the general track. However, the career academy program may not be equally effective for all students, as Table 4 shows. This table presents, by student demographics, the marginal probability of achieving educational benchmarks for each structured high school program. These marginal probabilities are akin to the aggregate probabilities presented in Table 2, but are now group specific. For example, the first row of this table presents the marginal probabilities for male students in the general track who are "average" on all other characteristics.

Results presented in Table 4 suggest that the educational impact of the career academy program may not be uniform for all students. Specifically, the career academy program does not significantly increase the probability of achieving educational benchmarks for all groups. The career academy program has a significant probability of increasing education over the general and vocational tracks for females, African Americans, and native-English speakers. It does not exhibit a significant impact for males, Latinos, and non-native English speakers. This suggests that there may be an interaction between curriculum and demographics. While the

programmatic emphasis in this study does not permit analysis of the reasons underlying these differentials, several possible explanations exist. For example, research has shown that demographic differences exist in learning styles of students (e.g., Biemiller, 1993). This may be particularly germane to the relative effectiveness of the career academies because fluent English may facilitate learning in curriculums that integrate knowledge of the local (American) labor market into academic subjects. The career academy's use of the context of the (local) labor market to motivate learning might also be more effective for groups, such as females and African Americans, who traditionally have seen more limited labor market opportunities.

We next turn our attention to the potential of creaming, or selecting more adept students into the academy program, as an explanation for the career academy's ability to raise marginal educational probabilities to the level of the academic track. Results strongly suggest that creaming does not exist in the career academies. In fact, Tables 5 and 6 strongly suggest that career academies (in this district) engage in "negative creaming". That is, as compared to students in the academic track (for example), career academies draw their enrollment from a group of students who were at the time of entrance less likely to continue education. If this is the case, the impact of the career academy program shown in the previous analysis is *understated* because the probabilities are computed for the "average" student.

Table 5 describes each high school program in terms of its educational outcomes, student composition, high school of attendance, and method of entrance into the program. When comparing the career academy program to the academic track[13] we see that the educational attainment of students in these programs is remarkably similar (Outcomes) while the school and student characteristics differ, as does the reason the student entered the program. A higher proportion of students in the career academy program than the academic track are female and enrolled in schools A, B, C, and E. These schools draw from the areas of

the city that are most impoverished, with school F drawing from the high-income population. As well, students in the career academy program are less likely to come from a home where English is the native language and less likely to have enrolled in a high school program based on parental conversations. Students in career academies were also less likely to be assigned to this programs than students in other tracks.

Results of the multinomial estimation of equations (2 and 2a) further suggest that students in the career academy program were less prepared than students in other tracks when they entered high school (Table 6). When "all else is equal," the career academy program enrolls a disproportionate number of African-Americans and Latinos and students who do not have English as their native language as compared to the general track. Career academy students are less likely than students in other tracks to have been assigned to the program. As compared to students in the general track, students in career academies are less likely have enrolled based on conversations with their parents than other tracks, and more likely to have chosen it after talking with friends. Perhaps most telling is the negative correlation between (reading) test score in the sophomore year and enrollment into the career academy program. This suggests that students who enroll in the career academy program are less academically prepared upon entering high school than are students in the general track. Furthermore, significant differences between coefficients suggest that students in career academies are negatively creamed as compared to students in vocational and academic tracks. [14] Interestingly, coefficient comparisons between the single-district and national samples suggest that creaming of students into the academic track may be similar while less creaming of students into the vocational track exists in the single-district sample than the national sample.

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[13] We focus on this comparison because our findings showed that educational outcomes are most similar for students in these programs. We note that the general conclusions drawn here do not differ for students in the general and vocational tracks.

[14] The significant (from the general track) negative correlation of entering reading scores for students in career academies differs significantly from the positive correlation for students in the vocational track and the positive

Of course, "creaming" into the career academy could easily exist along lines that are not captured here. For example, the relative newness of the career academies may attract students who are disillusioned with traditional programs. Alternatively, the empowerment gained from students selecting their high school programs (with friends instead of parents of school assignment) may motivate students to excel in the career academy environment. Nonetheless, even if creaming does exist along these lines, we still find evidence that *negative* creaming exists along characteristics that are observable. As such, results suggest that career academies enroll students with below average probabilities of educational success and, for whatever reason, raise their marginal probability of achieving educational benchmarks to a level achieved by students in the academic track.

SUMMARY AND POLICY IMPLICATIONS

Virtually all of our analysis supports the proposition that career academy programs could increase educational skills provided to urban, public school students. Results of this study show that career academies increase the probability of attending college and provide students with a greater variety skills than do the vocational and general tracks. Furthermore career academies, at least in the district from which we draw our data, enroll students that may be more "at-risk" than students other tracks.

One rather large caveat is in order before endorsement is given of the career academy approach as a universal strategy for all high school students. All students do not appear to benefit equally from the program, at least for the educational outcomes analyzed here. Some demographic groups show relatively greater educational gains in the career academies as compared to the traditional academic program, and others do not. The reasons for these differences lie beyond the data presented here, and dictate further research. The factors could include backgrounds that would make some students more receptive to, or able to absorb and

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language score for students in the academic track differs significantly from the insignificant effect of language of students entering the career academy.

make use of, the particular kind of curriculum and exposure to new experiences offered by career academies. These could include culturally-related learning styles, or the relative importance of English language skills, or the width of the gap different students must bridge from their prior experience to what they learn about the world of work.

Our findings suggest that while the academy program may be of great utility in increasing the educational attainment of at-risk students, it should not be offered as the only option in a high school serving a cross-section of the population, to the exclusion of an academic track. Even if all students could presumably benefit from a better understanding of the relationship between school and work, they would not all necessarily thrive in the same sort of (academy-style) contextual learning environment.

Finally, career academies can be costly to implement, especially when components such as paid work experiences for students and additional preparatory time for teachers must be covered out of program budgets. (The program in our study site cost more than $1,000 per student per year extra than the regular curriculum.) Identifying the impact of the program components (as well as a thorough cost effectiveness analysis) is essential in order to maximize the efficiency of program implementation. Because public school student bodies are becoming increasingly diverse, identification of the factors that stimulate learning for different types of students will be essential to maintaining an equitable educational system.

Table 1:Individual Student and School Characteristics: The Single-District and National (Across-District) Data

Individual Characteristics	District[1] High Schools	Single[2]-District Sample	National[3] Sample
High Schools			
% A	15.5	9.2	--
% B	17.4	18.8	--
% C	7.2	3.8	--
% D	19.4	24.6	--
% E	18.8	15.0	--
% F	21.7	27.6	--
Student Characteristics			
% Mom and Dad at 14	--	61.3	61.2
% English first language		55.3	74.7
% Take Achievement Test (sophomore year)	--	52.4	84.6
% High School Attendance	--	82.5	--
Program			
% Career Academy	--	25.4	--
% Academic	--	20.6	37.3
% Vocational	--	3.9	15.9
% General	--	50.1	46.8
Entrance			
% Assigned to program	--	40.0	40.3
% Talked to teach/counselor	--	27.4	42.8
% Talked to parents	--	13.3	33.0
% Talked to friends	--	13.6	21.4
Achieving Education Benchmarks			
%High School Graduate	--	84.5	79.9
%Attend 2 or 4 year College	--	75.3	62.7
%Attend 4-year College	--	41.0	29.7
Highest Grade Attended[1]			
% High School Dropout	--	15.5	20.1
% High School Graduate	--	12.2	20.9
% Attend 2-year College	--	34.5	33.1
% Attend 4-year College	--	41.0	29.7

High School Characteristics	District High Schools	Single-District Sample	National Sample	National High Schools
Demographic				
%Male	49.0	34.0	48.6	--
Race/Ethnicity				
% African-American	54.5	37.7	19.9	25.0
% Latino/Hispanic	17.6	16.4	27.2	23.4
% Asian	21.3	33.1	11.5	--
% White	3.8	9.9	40.3	44.7
% Filipino	1.4	1.6	--	--
% Pacific Islander	1.0	0.8	--	--
% Native American	0.2	0.4	--	--
% "Other" in NELS			1.2	6.9
High School Characteristics				
Average Daily Attendance	82.0	--	--	91.0
% Limited English Proficiency	26.2	--	--	14.0
% Receiving Free Lunch	38.2	--	--	28.3
Student-Teacher Ratio (mean)	28.4	--	--	18.1
Number of Students (mean)	1460	--	--	1914
N	8,760	1,087	2,845	2,845

[1]All district numbers are reported for the 1995-1996 school year and are taken from the district's School District Information Summary, 1995-1996 and School Profiles. Only information for students in comprehensive high schools is reported in the District High School information in our table. This excludes the 750 students who attended alternative high schools in 1995-1996. A comprehensive high school is defined as one that offers a curriculum that fulfills entrance requirements into the university system.

[2]Our single-district sample is restricted to students who responded to the post-graduation survey with an identifiable high school program and were not in a special education program.

[3]The national sample is restricted to sophomores who attended urban, public high schools, were not in a special education program, and were reinterviewed in the third follow up. Schools that were used in subsequent analysis may differ from those presented here because nearly 1000 students have missing data on ADA, which may also explain the large differences between our samples.

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Table 2: Probability of Achieving Educational Benchmarks

	Single-District Analysis				*National (Across-District) Analysis*		
	Probability for:[1]	***Percentage Point Change in Probability:***			***Probability for:***	***Percentage Point Change in Probability:***	
	General Track	*Career Academy*	*Academic*	*Vocational*	*General Track*	*Academic*	*Vocational*
On-Time HS Graduate[2]	89.7	**8.7**	**7.2**	-7.1*	93.4	**3.0**	0.37
Attend 2 or 4 year College	76.1	**11.6**	**8.7**	-7.3*	61.4	**12.8***	-0.77
Attend 4-year College	33.7	**17.9**	**15.9**	**-21.2***	23.6	**13.1***	**-1.8**

[1] The estimated probability for a student in the general track to articulate to each level of education is located in the second and sixth columns of the table. Numbers in the remaining columns are the change in the probability of the event occurring for students in each program. Probabilities are multiplied by 100. The probability to articulate is computed by converting the z score computed from the estimated probit for each level. The z value is computed using the mean values on all independent variables and 1 on the relevant track (0 on all track variables for students in the general track). The probability for general track students is reported here. The change in probability is computed by subtracting the predicted probability for students in a general track from the predicted probability of the relevant track. Full results of the probit analysis (estimation of text equation 1), on which the probabilities are computed, are located in Appendix Table 2. Appendix Table 1 provides a full definition of the variables.

[2] Numbers in **boldface** indicate that the probit coefficient is significant at $p \leq .05$ and numbers in *italics* indicate that the probit coefficient is significant at $p \leq .10$. An asterisk (*) in the single-district analysis indicates that the t-test for coefficient differences shows significant difference ($p \leq .05$) from the career academy coefficient. An asterisk (*) in the national across-district analysis indicates that the t-test for coefficient differences shows significant difference ($p \leq .05$) from the equivalent coefficient in the single-district analysis (e.g., academy coefficients differ).

Table 3: Attainment of Skills and Awareness about Work and Education: Standardized Regression Coefficients

	High School Only[2]			*Attend 2-year College Only*			*Attend 4-year College*		
	Career Academy[1]	*Academic*	*Vocational*	*Career Academy*	*Academic*	*Vocational*	*Career Academy*	*Academic*	*Vocational*
Work Focus[3]									
Meet Work Deadlines	.076	.083	.014	.060	.086	.073	**.159**	.079	.012
Communicate with Others	.033	.013	.000	.020	**.122**	.073	.104	.057	.020
Be Punctual/On-Time	.083	.024	.100	.076	*.108*	.064	*.117*	.055	.018
Be Self-motivated	.028	.026	.085	*.115*	*.095*	**.151**	**.193**	**.119**	.020
Education Focus									
Think Critically	.115	*.118*	.042	**.163**	.047	**.183**	**.310**	**.250**	.010
Improve in Basic Skills	-.001	.093	.064	*.116*	.042	.071	**.151**	**.164**	.006
Obtain Good Study Habits	.016	.050	.083	.016	*.098*	**.130**	*.133*	.081	.042
Maintain a Positive Attitude towards Education/ Training	-.024	.085	.048	**.124**	.047	.088	**.129**	*.086*	.016
Prepare for your Current Education/Training	.029	.095	.022	**.155**	.088	*.094*	**.177**	**.192**	**.100**
School-to-Work Focus									
Become aware of what is Required for Success	**.155**	.194	**.076**	**.127**	**.145**	**.145**	**.252**	**.114**	.036
Gain Confidence about your Abilities	.038	.072	.045	**.148**	*.095*	**.152**	**.207**	*.097*	.021
Understand the Link Between School-to-Work	.012	.101	.039	.082	.038	*.092*	**.169**	.064	.001
Set Future Goals	.023	.031	.086	*.097*	**.137**	**.181***	**.248**	**.139**	.010
N		239			340			420	

[1] Numbers are ***standardized*** regression coefficients estimated from text equation (1) with knowledge and skill measures as the dependent variable. Appendix Table 3 contains the full results of the OLS estimation. Appendix Table 1 provides a full definition of all variables. Coefficients in **boldface** are significant at $p \leq .05$ and coefficients in *italics* are significant at $p \leq .10$. An asterisk (*) indicates that the t-test for coefficient differences shows significant difference ($p \leq .05$) from the career academy coefficient.

[2] Columns include only individuals whose *highest grade attended* was high school (including dropouts and graduates, columns 2-4), 2-year college (columns 5-7), or 4-year college (columns 8-10). Twenty-six individuals who dropped out of high school also attended a post secondary college. These individuals are included in both analyses.

[3] The Education and Work Skill variables reflect a respondent's rating of how well their "high school education" helped them to achieve the listed skills. The rating scale ranges from 1 (a great deal) to 4 (not at all). The signs on the coefficients were reversed so that a positive standardized coefficient indicates a more positive rating.

Table 4: Demographic Differences in Achieving Educational Benchmarks

	Single-District Sample				National (Across-District) Sample		
	Probability of:[1]	Percentage Point Change in Probability:			Probability of:	Percentage Point Change in Probability:	
	General Track	Career Academy	Academic	Vocational	General Track	Academic	Vocational
Males (n=328, n=651)[2]							
HS Graduate	89.1	6.8	2.9	*-19.6**	93.9	**2.1**	0.1
Attend College	75.5	8.6	4.7	-5.0	66.6	**11.3***	-0.0
Attend 4-year university	29.5	170	14.2	-14.1	17.9	**11.2**	-0.6
Females (n=645, n=758)							
HS Graduate	91.5	**7.2**	**6.9**	-0.8*	93.8	**3.8**	0.5
Attend College	76.7	**13.6**	**11.4**	-7.2*	70.5	**11.6**	*-1.4*
Attend 4-year university	35.6	**20.0**	**17.2**	**-25.9***	27.1	**15.0***	**-3.2**
African-American (n=360, n=280)							
HS Graduate	83.4	**12.3**	*8.8*	-12.9*	91.9	**3.4**	1.4
Attend College	74.5	*10.3*	4.9	-2.3	86.9	**4.0**	-1.3
Attend 4-year university	27.4	**15.8**	**15.0**	-22.2*	22.4	**10.0**	0.0
Latino/Hispanic (n=151, n=321)							
HS Graduate	82.6	4.0	*15.1*	0.0	88.5	**3.6**	-0.4
Attend College	59.1	15.8	**32.2**	-13.5	54.0	**13.0**	-0.0
Attend 4-year university	12.1	*15.0*	**27.3**	-4.8	11.7	**11.0**	-0.4
English (n=530, n=1109)							
HS Graduate	84.1	**12.9**	**9.7**	-13.6*	94.3	**3.0***	0.5
Attend College	73.6	**15.7**	**10.1**	-6.2*	63.7	**13.1***	-0.4
Attend 4-year university	28.4	**16.0**	**18.4**	*-0.7**	24.2	**14.0***	**-2.1**
Native English (n=443, n=300)							
HS Graduate	94.1	2.9	4.3	-2.6	94.6	1.9	0.1
Attend College	80.6	4.1	6.4	-6.9	47.6	**12.3**	-2.0
Attend 4-year university	42.1	**19.7**	9.1	-18.5*	20.9	**11.7***	-1.1

[1]See notes on Table 2. Full results are located in Appendix Table 4.

[2]The first n is the sample size for the single-district analysis and the second n is the second sample size for the national (across-district) analysis.

[3] Sample size prohibited probit analysis for Asians.

Table 5: Characteristics of Students by High School Program: The Single-District Sample

Characteristic[1]	*Career Academy*	*Academic*	*Vocational*	*General*
Outcomes				
Achieving Education Benchmarks				
%High School Graduate	92.0	92.9	69.0*	78.3*
%Attend 2 or 4 year College	82.2	83.5	59.5*	69.7*
%Attend 4-year College	51.8	52.2	9.5*	33.4*
Highest Grade Attended[9]				
% High School Dropout	8.0	7.1	31.0*	21.7*
% High School Graduate	11.6	10.7	14.3	13.0
% Attend 2-year College	30.4	31.3	50.0*	36.7
% Attend 4-year College	51.8	52.3	9.5*	33.4*
Demographic				
% Male	27.6	32.4	35.7	37.8*
% African-American	42.7	44.6	45.2	31.7*
% Latino	18.8	8.5*	14.3	18.5
% White	8.0	16.0*	2.4*	8.9
% Asian	28.6	27.2	35.7	37.6
High School				
% A	12.0	7.6	2.4	9.0
% B	17.4	13.8	45.2*	19.4
% C	11.6	0.9*	2.4	1.1*
% D	8.7	25.0*	23.8*	32.5*
% E	35.5	7.6*	16.7*	7.5*
% F	14.9	44.2*	9.5	28.6*
Student Characteristics				
% Mom and Dad at 14	61.1	58.3	47.6	63.6
% English first language	55.6	69.2*	52.4	49.6
% Take Test	59.4	51.3	42.9*	50.1*
% Classes attended in hs	87.6	82.7*	75.7*	80.3*
Program				
% Assigned to program	16.5	42.9*	23.8	51.9*
% Talked to teacher /counselor	32.6	35.3	19.0	22.2*
% Talked to parents	13.3	22.3*	14.3	9.7
% Talked to friends	23.2	10.7*	11.9	10.1*
N	276	224	42	545

[1]See Appendix Table 1 for a definition of the variables. Numbers are mean values for the Single-District sample. Subsequent tables and appendices present data based on a sample that excludes individuals with missing data on estimation variables (87% of this sample). An asterisk (*) indicates that the t-test for mean differences shows significant difference ($p \leq .05$) from the career academy mean.

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Table 6: Determinants of Student's Program in High School: Multinominal Logit Estimation

Characteristic	*Career Academy*	*Academic*	*Vocational*	*Academic*	*Vocational*
	Single-District Sample			*National Sample*	
Estimated using Student Characteristics[1]					
Demographic					
Male	-.207	-.429	**-.521**	-.049	**-.309**
African-American	**.845**	-.545	**.689**	**-.752**	-.067*
Latino	**1.017**	-.315	.053	-.353	**-.431**
Asian	-.106	-.837	-.478	.674	-.372
Background					
Take Achievement Test	.302	*.607*	.237	.317	.259
Mom and Dad at 14	.237	**.808**	*.371*	.161	.101
English first language	**-.705**	.245	-.209	.269	-.088
Entrance					
Assigned to program	**-1.44**	.186*	**-1.60***	**.379**	**-.474***
Talked to teacher/counselor	*-.367*	*.843**	.118	.049	**.273**
Talked to parents	**-.871**	.146	-.319	**.464**	**.408***
Talked to friends	**1.106**	*1.076*	**.953**	-.066	**.327***
Intercept	-.460	-1.282	.459	.368	-.055
N		973		1,409	
Estimated Using Test Scores[2]					
Math, Sophomore year	.003	.013	.002	*.030*	.018
Reading, Sophomore year	**-.014**	-.001	.008*	**.086***	**.053***
Language, Sophomore year (single-district)	.007	**.058***	-.001		
History, Sophomore year (national)				**.038**	**.034**
Intercept	*.534*	-.251	**-.961**	-6.528	-5.196
N		527		1331	

[1]Numbers are multinominal logit coefficients estimated from text equations (2 and 2a). Coefficients in **boldface** are significant at $p \leq .05$ and coefficients in *italics* are significant at $p \leq .10$. An asterisk (*) in the single-district analysis indicates that the t-test for coefficient differences shows significant difference ($p \leq .05$) from the career academy coefficient. An asterisk (*) in the national across-district analysis indicates that the t-test for coefficient differences shows significant difference ($p \leq .05$) from the equivalent coefficient in the single-district analysis (e.g., academy coefficients differ). See Appendix Table 1 for variable definitions.

[2]The table contains two separate estimations. Results of the extended estimation are located in the top portion of the table and results of the estimation containing only test scores are located in the bottom portion of the table. While both the single-district and national data bases contain differing tests to measure math and reading, only the single-district data base contains a language examination and only the national data base contains a history examination.

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Appendix 1: Description of Variables: Means and (standard deviations)

Individual Characteristic	*Description*	*Single-District*[1]	*National*
Demographic			
Male	A 0, 1 binary variable with 1 indicating a male respondent	.333 (.473)	.462 (.499)
African-American	A 0, 1 binary variable with 1 indicating an African-American respondent	.370 (.483)	.198 (.399)
Latino/Hispanic	A 0, 1 binary variable with 1 indicating a Latino (Mexican or Latino) respondent in the single-district sample and an Hispanic respondent in the national sample	.155 (.362)	.228 (.420)
Asian	A 0, 1 binary variable with 1 indicating an Asian respondent	.345 (.476)	.114 (.318)
High School			
A	A 0, 1 binary variable with 1 indicating a respondent who attended A high school	.092 (.290)	--
B	A 0, 1 binary variable with 1 indicating a respondent who attended B high school	.176 (.381)	--
C	A 0, 1 binary variable with 1 indicating a respondent who attended C high school	.037 (.189)	--
D	A 0, 1 binary variable with 1 indicating a respondent who attended D school	.248 (.432)	--
E	A 0, 1 binary variable with 1 indicating a respondent who attended E high school	.153 (.360)	--
Student Characteristics			
Mom and Dad at 14	A 0, 1 binary variable with 1 indicating a respondent who lived with his/her mother and father at age 14	.625 (.484)	.658 (.475)
English first language	A 0, 1 binary variable with 1 indicating a respondent for whom English is the native language	.545 (.498)	.787 (.410)
Take Achievement Test (Sophomore Year)	A 0, 1 binary variable with 1 indicating a respondent who took the achievement test	.542 (.499)	.940 (.237)
High School Attendance	Percentage of the final fall quarter semester spent in class	82.6 (21.0)	--
Program			
Career Academy	A 0, 1 binary variable with 1 indicating a respondent who attended an academy	.263 (.441)	--
Academic	A 0, 1 binary variable with 1 indicating a respondent who was in an academic high school program	.208 (.406)	.447 (.497)
Vocational	A 0, 1 binary variable with 1 indicating a respondent who was in a vocational high school program	.041 (.199)	.152 (.359)
Entrance			
Assigned to program	A 0, 1 binary variable with 1 indicating a respondent who was assigned to a high school program	.386 (.487)	.386 (.487)
Talked to teacher /counselor	A 0, 1 binary variable with 1 indicating a respondent who talked to a teacher or counselor before selecting a high school program	.282 (.450)	.442 (.497)
Talked to parents	A 0, 1 binary variable with 1 indicating a respondent who talked to his/her parents before selecting a high school program	.134 (.340)	.345 (.476)
Talked to friends	A 0, 1 binary variable with 1 indicating a respondent who talked to his/her friends before selecting a high school program	.143 (.350)	.215 (.411)

[1]The mean values on these variables differ from those in those presented in text Tables 1 and 5, which are based on *all* individuals in the relevant data bases who were from comprehensive, urban, public high schools and for whom a high school program that was not special education could be identified. The number of missing values changes for each variable. The characteristics presented in this table are based on a (constant) sample of individuals who were used in the estimations (results of which are presented in Tables 2-4, 6). This sample is reduced by virtue of missing data on (any) variable used in the analysis.

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Individual Characteristic	*Description*	*Single-District*	*National*
Educational Benchmarks			
HS Graduate (On-Time)	A 0, 1 binary variable with 1 indicating a respondent who graduated from high school on time	.888 (.327)	.946 (.226)
Attend 2 or 4 year university	A 0, 1 binary variable with 1 indicating a respondent who attended a college or university	.779 (.415)	.732 (.443)
Attend a 4-year university	A 0, 1 binary variable with 1 indicating a respondent who articulated to a 4-year college or university	.432 (.496)	.370 (.483)
Highest Grade Attended			
High School Dropout	A 0, 1 binary variable with 1 indicating a respondent who dropped out of high school before an on-time graduation	.121 (.326))	.054 (.226)
High School Graduate	A 0, 1 binary variable with 1 indicating a respondent who graduated from high school on time and did not attend a post secondary college	.124 (.330)	.227 (.419)
Attend 2-year College	A 0, 1 binary variable with 1 indicating a respondent who articulated to a 2-year college but did not attend a 4-year college	.349 (.477)	.361 (.481)
Attend 4-year College	A 0, 1 binary variable with 1 indicating a respondent who articulated to a 4-year college or university	.432 (.496)	.370 (.483)
Skills and Awareness			
Meet Work Deadlines	A 1-4 categorical variable indicating how well the high school program helped the respondent to meet work deadlines (1=a great deal; 4=not at all)	2.10 (.949)	--
Communicate with Others	A 1-4 categorical variable indicating how well the high school program helped the respondent to communicate with others (1=a great deal; 4=not at all)	1.92 (.886)	--
Be Punctual/On-Time	A 1-4 categorical variable indicating how well the high school program helped the respondent to be punctual/ on-time (1=a great deal; 4=not at all)	2.00 (.950)	--
Be Self-motivated	A 1-4 categorical variable indicating how well the high school program helped the respondent to be self-motivated (1=a great deal; 4=not at all)	2.03 (.974)	--
Think Critically	A 1-4 categorical variable indicating how well the high school program helped the respondent to think critically (1=a great deal; 4=not at all)	2.03 (.913)	--
Improve Basic Skills	A 1-4 categorical variable indicating how well the high school program helped the respondent to improve in basic skills (1=a great deal; 4=not at all)	1.83 (.836)	--
Obtain Good Study Habits	A 1-4 categorical variable indicating how well the high school program helped the respondent to obtain good study habits (1=a great deal; 4=not at all)	2.40 (.979)	--
Maintain a Positive Attitude towards Education/Training	A 1-4 categorical variable indicating how well the high school program helped the respondent to maintain a positive attitude towards education/training (1=a great deal; 4=not at all)	2.06 (.969)	--
Prepare for Current Education/Training	A 1-4 categorical variable indicating how well the high school program helped the respondent to prepare for current education/training (1=a great deal; 4=not at all)	2.24 (.999)	--
Become aware of what is Required for Success	A 1-4 categorical variable indicating how well the high school program helped the respondent to become aware of what is required of success (1=a great deal; 4=not at all)	2.14 (.991)	--
Gain Confidence about Abilities	A 1-4 categorical variable indicating how well the high school program helped the respondent to gain confidence about abilities (1=a great deal; 4=not at all)	2.10 (.982)	--
Understand the Link Between School-to-Work	A 1-4 categorical variable indicating how well the high school program helped the respondent to understand the link between school and the "real world" (1=a great deal; 4=not at all)	2.34 (1.09	--
Set Future Goals	A 1-4 categorical variable indicating how well the high school program helped the respondent to set future goals (1=a great deal; 4=not at all)	2.15 (1.03)	--
School Characteristics			
ADA	Percentage average daily attendance of students	--	90.9 (4.45)
% African-American	Percentage of students in the student's class (10th grade) that are African-American	--	23.7 (27.0)
% Hispanic	Percentage of students in the student's class (10th grade) that are Hispanic	--	21.2 (28.4)
% White	Percentage of students in the student's class (10th grade) that are white	--	49.6 (32.7)
% LEP	Percentage of students in the student's school that have limited English proficiency	--	13.9 (19.0)
% Free Lunch	Percentage of students in the student's school that are part of the free lunch program	--	27.3 (21.7)
SFR	Student-teacher ratio. Computed using the number of full-time teachers at the school divided by size (defined below)	--	17.6 (4.0)
Size	An estimate of the number of students in the school, which uses a categorical variable (1-9) midpoints of each range as the estimated number of students	--	1862 (690)
N		973	1.409

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Appendix 2: Probit Estimation of Educational Attainment

	Single-District Sample			National (Across-District) Sample		
Characteristic	*Graduation*	*Attend College*	*Attend 4-year*	*Graduation*	*Attend College*	*Attend 4-year*
Demographic						
Male	-.2278	-.2154	-.2594	-.1862	-.3049	-.1938
	(.1308)	(.1023)	(.1098)	(.1215)	(.0766)	(.0762)
African-American	.1849	-.0321	-.0463	.0342	.0877	.0733
	(.2206)	(.1814)	(.1805)	(.2138)	(.1300)	(.1297)
Latino/Hispanic	-.1683	-.5344	-.5801	-.1491	-.2006	-.3554
	(.2812)	(.2328)	(.2454)	(.1977)	(.1331)	(.1391)
Asian	.2712	.1140	-.0353	.0669	.2746	.1814
	(.2910)	(.2291)	(.2184)	(.2892)	(.1791)	(.1534)
School						
A (single-district)	-.7755	-.7087	-.5873	.0161	.0052	.0217
ADA (national)	(.2343)	(.1886)	(.2130)	(.0135)	(.0010)	(.0097)
B (single-district)	-.4592	-.5702	-.6308	-.0054	-.0073	.0012
% African-American (national)	(.2340)	(.1625)	(.1768)	(.0071)	(.0043)	(.0038)
C	-1.028	-.8415	-.4768	-.0060	-.0051	.0043
%Hispanic (national)	(.3322)	(.2692)	(.3112)	(.0072)	(.0045)	(.0040)
D (single-district)	-.0333	-.2631	-.2906	-.0014	-.0049	.0011
% White (national)	(.2080)	(.1470)	(.1446)	(.0070)	(.0040)	(.0034)
E (single-district)	-.8759	-.3223	-.1923	.0024	-.0007	-.0065
% LEP (national)	(.2184)	(.1778)	(.1739)	(.0036)	(.0026)	(.0030)
% Free Lunch				-.0063	-.0051	-.0027
				(.0035)	(.0025)	(.0036)
SFR				-.0301	-.0017	-.0376
				(.0166)	(.0104)	(.0104)
Size				-.0002	.0000	.0002
				(.0001)	(.0000)	(.0001)
Student Characteristics						
Mom and Dad at 14	.4183	.1988	.2477	.3344	.2084	.1695
	(.1375)	(.1098)	(.1193)	(.1274)	(.0819)	(.0839)
English first Language	-.0375	.2341	-.2578	-.1208	-.0728	-.0349
	(.2517)	(.1902)	(.1912)	(.1752)	(.1239)	(.1243)
Take Achievement Test	.0399	-.3664	-.0766	.0891	.1005	.1157
	(.1275)	(.1012)	(.1033)	(.2187)	(.1603)	(.1673)
High School Attendance	.0232	.0139	.0195			
	(.0025)	(.0022)	(.0034)			
Program						
Career Academy	.7310	.4527	.4602			
	(.1804)	(.1344)	(.1391)			
Academic	.5318	.3240	.4070	.6704	.8035	.8612
	(.1858)	(.1340)	(.1331)	(.1481)	(.0868)	(.0816)
Vocational	-.2971	-.2113	-.7309	.2118	-.1437	-.3646
	(.2451)	(.2266)	(.3434)	(.1650)	(.1050)	(.1295)
Intercept	-.6496	.2942	-1.514	1.3026	.5077	-2.3635
N		973			1409	

Numbers are estimated probit coefficients with standard errors in parenthesis. See Appendix Table 1 for variable definitions.

Appendix Table 3: Ordinary Least Squares Analysis of High School Human Capital Production

A: High School Graduates

Characteristic	*Deadline*	*Commu*	*Punctual*	*Self-Motiv*	*Think*	*Basic Skills*	*Study*	*Attitude*	*Prepare*	*Success*	*Confid.*	*STW*	*Goals*
Demographic													
Male	-.0600	.1282	.1547	.0577	-.0079	.1159	.1828	.1668	.1501	.1140	.0789	.1741	.1833
	(.137)	(.129)	(.133)	(.137)	(.126)	(.122)	(.138)	(.138)	(.144)	(.138)	(.138)	(.156)	(.143)
African-American	-.1582	.0680	-.6710	-.3399	-.1975	-.2106	-.3853	-.3470	-.2173	.1196	-.2887	-.7210	-.8789
	(.244)	(.228)	(.237)	(.244)	(.224)	(.217)	(.246)	(.245)	(.256)	(.245)	(.138)	(.228)	(.255)
Latino	-.4024	-.1473	-.4959	-.4903	-.4644	-.3680	-.5908	-.1260	-.5194	-.5144	--.3860	-.7722	-.9471
	(.302)	(.282)	(292)	(.302)	(.277)	(.268)	(.304)	(.303)	(.316)	(.302)	(.303)	(.343)	(.315)
Asian	-.3746	.0543	-.2837	-.2743	-.2304	-.3816	-.2411	-.3300	-.6078	-.5406	-.2327	-.6318	-.5941
	(.328)	(.307)	(.317)	(.328)	(.300)	(.291)	(.330)	(.329)	(.344)	(.328)	(.330)	(.373)	(.342)
School													
A	.1434	-.0999	-.0670	-.0996	-.0520	-.3302	-.4864	-.3652	-.6221	-.4938	-.4684	-.1780	-.3737
	(.244)	(.228)	(.236)	(.244)	(.223)	(.217)	(.245)	(.245)	(.256)	(.244)	(.245)	(.277)	(.254)
B	-.0325	.0012	-.4459	-.3906	-.2899	-.2744	-.4235	-.4222	-.5161	-.5298	-.6996	-.3053	-.2574
	(.222)	(.208)	(.215)	(.222)	(.203)	(.197)	(.223)	(.223)	(.232)	(.222)	(.223)	(.253)	(.232)
C	-.2494	-.8349	-.4619	-.6146	-.3503	-.3941	-.8356	-.7063	1.004	-.6803	-1.113	-.7134	-.9099
	(.325)	(.304)	(.315)	(.325)	(.298)	(.289)	(.327)	(.327)	(.341)	(.326)	(.327)	(.370)	(.339)
D	.0382	-.1491	-.416	-.2685	-.1688	-.3079	-.5148	-.3321	-.5606	-.4451	-.7357	-.3969	-.5829
	(.220)	(.205)	(.212)	(.219)	(.201)	(.195)	(.221)	(.221)	(.230)	(.220)	(.221)	(.250)	(.229)
E	.1288	.2317	-.0397	.1399	.1322	-.0581	-.2562	-.0084	-.2655	-.2200	-.3202	-.1679	-.4198
	(.251)	(.235)	(.243)	(.251)	(.230)	(.222)	(.252)	(.252)	(.263)	(.251)	(.252)	(.286)	(.262)
Student Characteristics													
Mom and Dad at 14	.0766	.0442	-.1186	.0787	.1335	.1021	.1380	.0531	-.0862	.0688	.0657	.1846	.0990
	(.145)	(.135)	(.140)	(.145)	(.133)	(.129)	(.146)	(.145)	(.152)	(.145)	(.146)	(.165)	(.151)
English first language	-.4299	-.1997	-.0140	-.2910	-.3970	-.2926	-.1623	.0065	-.6981	-.4771	-.2679	-.1245	-.1149
	(.270)	(.252)	(.261)	(.270)	(.247)	(.240)	(.271)	(.271)	(.283)	(.270)	(.271)	(.307)	(.281)
High School Attendance	-.0044	-.0062	-.0046	-.0062	-.0038	-.0077	-.0073	-.0058	-.0052	-.0038	-.0053	-.0042	-.0097
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.003)	(.002)
Program													
Career Academy	-.1967	-.0808	.2118	-.0730	-.2791	.0033	-.0441	.0630	-.0816	-.4155	-.1031	-.0355	-.0664
	(.189)	(.176)	(.182)	(.188)	(.172)	(.167)	(.190)	(.189)	(.198)	(.411)	(.190)	(.215)	(.197)
Academic	-.2379	-.0344	.0665	-.0773	-.3186	-.2423	-.151	-.2474	-.2947	-.5778	-.2144	-.3345	-.0987
	(.197)	(.185)	(.191)	(.197)	(.181)	(.175)	(.198)	(.198)	(.207)	(.198)	(.198)	(.224)	(.206)
Vocational	-.0543	-.0010	.3735	-.3298	-.1497	-.2220	-.3300	-.1850	-.0897	-.3008	-.1793	-.1695	-.3655
	(.258).	(.241)	(.250)	(.258)	(.237)	(.229)	(.198)	(.259)	(.271)	(.258)	(.260)	(.294)	(.269)
Constant	3.086	2.492	2.945	3.161	2.933	3.044	3.622	2.983	3.981	3.502	3.497	3.430	-4.037
R^2	.063	.1032	.099	.108	.109	.108	.135	.097	.126	.135	.134	.101	.186
N							239						

Signs are reversed in text tables. Numbers are *unstandardized* regression coefficients with standard errors in parentheses. See Appendix Table 1 for variable definitions.

B: Attend Post Secondary

Characteristic	*Deadline*	*Commu*	*Punctual*	*Self-Motiv*	*Think*	*Basic Skills*	*Study*	*Attitude*	*Prepare*	*Success*	*Confid.*	*STW*	*Goals*
Demographic													
Male	.2028	.0924	.2918	.3187	.2012	.1541	.3488	.2720	.2399	.1240	.2394	.2251	.2325
	(.115)	(.100)	(.108)	(.109)	(.103)	(.099)	(.106)	(-.576)	(.116)	(.156)	(.114)	(.122)	(.112)
African-American	-.5231	-.0428	-.7802	-.5100	-.4679	-.2597	-.5714	-.5756	-.4750	-.3758	-.5277	-.8159	-.8011
	(.194)	(.169)	(.184)	(.184)	(.174)	(.167)	(.179)	(.190)	(.197)	(.196)	(.193)	(.207)	(.189)
Latino	-.5080	-.1572	-.6190	-.3864	-.2563	-.1590	-.2632	-.4271	-.4069	-.2883	-.5610	-.8154	-.6687
	(.242)	(.211)	(.229)	(.229)	(.216)	(.208)	(.223)	(.236)	(.245)	(.244)	(.240)	(.258)	(.235)
Asian	-.6985	-.1457	-.5075	-.4655	-.2922	-.2116	-.2976	-.4468	-.3783	-.3422	-.3687	-.6300	-.5031
	(.229)	(.199)	(.216)	(.217)	(.204)	(.197)	(.210)	(.223)	(.231)	(.230)	(.227)	(.243)	(.222)
School													
A	-.3851	-.1980	-.3119	-.1275	.1148	-.2357	-.3906	-.1572	-.1462	-.3841	-.0176	-.2694	-.1711
	(.213)	(.186)	(.202)	(.202)	(.191)	(.184)	(.196)	(.208)	(.217)	(.215)	(.212)	(.227)	(.207)
B	-.1925	-.1948	-.1455	-.0996	-.1285	-.2390	-.2580	-.2995	-.2866	-.3611	-.0706	-.2389	-.1211
	(.178)	(.155)	(.168)	(.169(	(.159)	(.153)	(.164)	(.173)	(.180)	(.179)	(.176)	(.189)	(.173)
C	-.1908	-.5260	-.2457	-.4512	-.0327	-.1546	-.9251	-.1564	-.1534	-.5556	-.6561	-.3539	-.0560
	(.345)	(.301)	(.326)	(.327)	(.308)	(.297)	(.318)	(.208)	(.350)	(.347)	(.342)	(.367)	(.335)
D	.1675	.0823	.1015	.1832	.0475	.0378	-.1653	-.2656	-.2752	-.2819	-.0181	-.1703	-.0605
	(.157)	(.137)	(.148)	(.149)	(.140)	(.135)	(.145)	(.153)	(.159)	(.158)	(.156)	(.167)	(.152)
E	.1223	.1218	-.1670	.1869	.1171	.0455	-.2430	.0271	-.2300	-.1135	.1771	-.0713	.1185
	(.191)	(.167)	(.181)	(.181)	(.171)	(.164)	(.176)	(.186)	(.194)	(.193)	(.190)	(.204)	(.186)
Background/Activity													
Mom and Dad at 14	.0235	.1106	.0139	.0397	-.1107	-.0249	.0271	-.0871	-.092	-.1322	.0595	.0049	.1688
	(.122)	(.106)	(.115)	(.116)	(.109)	(.105)	(.112)	(.119)	(.124)	(.123)	(.121)	(.130)	(.119)
English first language	-.1684	-.1745	.2402	.0981	-.1778	-.0662	.2725	.0329	.0469	-.1341	-.1433	.1190	.1240
	(.192)	(.167)	(.181)	(.182)	(.171)	(.165)	(.176)	(.187)	(.1944)	(.193)	(.190)	(.204)	(.186)
Attendance	-.0019	.0005	-.0007	-.0019	-.0030	-.0014	-.0013	-.0031	-.0033	-.0026	-.0006	-.0011	-.0042
	(.003)	(.002)	(.003)	(.003)	(.002)	(.002)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Program													
Career Academy	-.1444	-.0408	.1760	-.2660	-.3552	-.2344	-.0372	-.2901	-.3753	-.3058	-.3589	-.2103	-.2362
	(.145)	(.126)	(.137)	(.138)	(.130)	(.125)	(.134)	(.142)	(.147)	(.146)	(.144)	(.154)	(.141)
Academic	-.2221	-.2714	-.2710	-.2362	-.1103	-.0923	-.2402	-.1035	-.2315	-.3791	-.2493	.1047	-.3600
	(.146)	(.128)	(.138)	(.139)	(.131)	(.126)	(.135)	(.143)	(.148)	(.147)	(.145)	(.156)	(.142)
Vocational	-.3129	-.2675	-.2663	-.6209	-.7134	-.2581	-.5285	-.3669	-.4071	-.6242	-.6595	-.4234	-.7841
	(.238)	(.208)	(.225)	(.226)	(.213)	(.205)	(.219)	(.232)	(.242)	(.240)	(.236)	(.254)	(.231)
Constant	2.927	2.073	2.428	2.575	2.8211	2.272	2.828	2.032	3/211	3..205	2.797	3.211	3.064
R^2	.097	.068	.136	.123	.127	.067	.146	.102	.094	.097	.132	.116	.166
N							340						

C: Attend 4-year

Characteristic	*Deadline*	*Commu*	*Punctual*	*Self-Motiv*	*Think*	*Basic Skills*	*Study*	*Attitude*	*Prepare*	*Success*	*Confid.*	*STW*	*Goals*
Demographic													
Male	.0710	.1059	.1118	.1648	.0046	-.0232	.1267	.2251	.0683	.1197	-.1792	.1448	.1366
	(.091)	(.093)	(.098)	(.100)	(.090)	(.084)	(.102)	(.095)	(.097)	(.098)	(.097)	(.111)	(.102)
African-American	-.0875	-.2291	-.1586	-.1934	-.4986	-.1956	-.0397	-.3633	-.1687	-.2862	-.2306	.0102	-.2823
	(.146)	(.148)	(.157)	(.160)	(.144)	(.134)	(.163)	(.152)	(.155)	(.156)	(.155)	(.177)	(.163)
Latino	-.3672	-.2677	-.3524	-.3329	-.6422	-.4446	-.2935	-.4803	-.2216	-.2303	-.2871	.1345	-.6496
	(.223)	(.226)	(.240)	(.245)	(.221)	(.204)	(.249)	(.233)	(.237)	(.239)	(.237)	(.270)	(.250)
Asian	-.0775	-.1232	-.1311	-.1422	-.3544	-.1159	-.0446	-.1211	-.0098	-.1049	-.0050	.1493	.0236
	(.178)	(.180)	(.191)	(.195)	(.176)	(.163)	(.198)	(.185)	(.189)	(.190)	(.188)	(.215)	(.199)
School													
A	.0936	.1867	-.1798	-.0346	.1206	-.2412	.2198	-.0694	-.1609	-.2191	-.0877	-.1767	-.3927
	(.201)	(.204)	(.216)	(.220)	(.198)	(.184)	(.224)	(.203)	(.213)	(.215)	(.212)	(.243)	(.225)
B	-.3000	-.0895	-.1103	-.2599	-.1498	.0404	-.0939	-.3467	-.1901	-.2994	-.3085	-.5905	-.0469
	(.162)	(.165)	(.174)	(.178)	(.161)	(.149)	(.181)	(.169)	(.172)	(.174)	(.172)	(.197)	(.182)
C	-.0323	-.3583	-.4332	-.0989	-.1067	-.2989	-.5299	-.6298	-.4753	-.4763	-.2111	-.7888	-.3169
	(.279)	(.283)	(.300)	(.306)	(.276)	(.256)	(.311)	(.291)	(.297)	(.299)	(.296)	(.338)	(.313)
D	-.2161	.1496	-.1391	-.2253	-.1761	.0433	-.0838	-.2574	-.1056	-.2111	-.0373	-.2144	-.1188
	(.115)	(.117)	(.123)	(.126)	(.114)	(.105)	(.128)	(.120)	(.122)	(.123)	(.122)	(.139)	(.129)
E	-.4242	-.0969	-.3056	-.2469	-.3171	-.2014	-.3445	-.5330	-.3675	-.3978	-.1436	-.2976	-.1099
	(.141)	(.143)	(.151)	(.154)	(.139)	(.129)	(.157)	(.147)	(.149)	(.151)	(.149)	(.170)	(.157)
Background/Activity													
Mom and Dad at 14	-.0736	.1013	-.0236	.1979	.1050	.0082	.0159	.0550	.1745	.1314	.0375	.1262	.1862
	(.105)	(.106)	(.112)	(.115)	(.103)	(.096)	(.117)	(.109)	(.111)	(.112)	(.111)	(.127)	(.117)
English first language	-.0962	-.2069	.0979	-.2045	-.1299	-.1178	.1657	.0400	.0106	.1055	.1422	.0826	.0830
	(.157)	(.160)	(.169)	(.173)	(.156)	(.144)	(.175)	(.164)	(.167)	(.168)	(.166)	(.191)	(.176)
Attendance	-.0038	-.0023	-.0047	-.0039	-.0002	-.0031	-.0037	-.0099	-.0098	-.0059	-.0047	-.0046	-.0060
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.004)	(.003)
Program													
Career Academy	-.2918	-.1932	-.2283	-.3900	-.5970	-.2534	-.2713	-.2588	-.3533	-.5167	-.4041	-.3778	-.5300
	(.125)	(.126)	(.134)	(.137)	(.123)	(.114)	(.139)	(.130)	(.132)	(.134)	(.132)	(.151)	(.140)
Academic	-.1550	-.1139	-.1154	-.2572	-.5152	-.2967	-.1765	-.1852	-.4129	-.2503	-.2018	-.1528	-.3175
	(.107)	(.108)	(.115)	(.117)	(.105)	(.098)	(.119)	(.111)	(.113)	(.114)	(.113)	(.129)	(.119)
Vocational	-.1061	.1795	-.1700	-.1940	-.0921	-.0456	.4105	-.1578	-.9694	-.3545	-.1981	-.0130	-.1081
	(.426)	(.431)	(.457)	(.467)	(.421)	(.390)	(.474)	(.444)	(.452)	(.456)	(.450)	(.516)	(.476)
Constant	2.832	2.388	2.798	2.741	2.892	2.538	2.891	3.355	3.370	3.059	2.775	2.931	2.921
R^2	.013	.093	.077	.110	.200	.102	.097	.178	.148	.172	.107	.108	.169
N							420						

Appendix 4: Probit Estimation of Educational Attainment: Demographic Differences

A: Gender—Single District Sample

	Males			*Females*		
Characteristic	*Graduation*	*Attend College*	*Attend 4-year*	*Graduation*	*Attend College*	*Attend 4-year*
Demographic						
African-American	-.2368	-.1835	-.2132	.3354	-.0111	.0517
	(.345)	(.274)	(.309)	(.286)	(.211)	(.195)
Latino	-.1944	-.8012	-.8485	-.3675	-.6432	-.5547
	(.390)	(.298)	(.357)	(.446)	(.214)	(.216)
Asian	-.2051	-.8967	-.6156	.3864	.2568	.0287
	(.396)	(.279)	(.310)	(.446)	(.252)	(.215)
School						
A	-.4291	-.4168	-.9273	-.9870	-.8184	-.5036
	(.393)	(.327)	(.480)	(.318)	(.235)	(.235)
B	-.6472	-.2783	-.2568	-.4047	-.6427	-.7456
	(.363)	(.290)	(.346)	(.295)	(.201)	(.203)
C	.7126	-.7431	-.8975	-1.1795	-.8828	-.3974
	(.569)	(.479)	(.807)	(.443)	(.336)	(.335)
D	.0048	-.4205	-.4044	-.0365	-.0927	-.2042
	(.340)	(.236)	(.256)	(.284)	(.196)	(.171)
E	-.5766	-.0198	.1387	-1.0260	-.4339	-.3009
	(.402)	(.325)	(.348)	(.286)	(.218)	(.197)
Student Characteristics						
Mom and Dad at 14	.4185	.2037	.1485	.4596	.1540	.2565
	(.225)	(.186)	(.237)	(.193)	(.139)	(.136)
English first Language	-.1612	-.4397	-.1872	-.1784	-.3049	-.3574
	(.369)	(.273)	(.283)	(.275)	(.205)	(.187)
Take Achievement Test	.2121	-.2432	-.1695	-.1564	-.4332	-.0380
	(.209)	(.167)	(.193)	(.176)	(.130)	(.120)
High School Attendance	.0233	.0112	.0210	.0246	.0150	.0188
	(.005)	(.003)	(.007)	(.004)	(.003)	(.004)
Program						
Career Academy	.5141	.3106	.3537	.8428	.5728	.5065
	(.324)	(.242)	(.281)	(.236)	(.167)	(.159)
Academic	.1687	.1551	.2766	.7517	.4526	.4322
	(.307)	(.226)	(.252)	(.262)	(.171)	(.154)
Vocational	-.7176	-.1536	-.4835	-.0539	-.2251	-.9354
	(.397)	(.340)	(.531)	(.351)	(.285)	(.462)
Intercept	-.6177	.4915	-1.6737	-.6454	.2656	-1.484
N		328			645	

Numbers are estimated probit coefficients with standard errors in parenthesis.

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B: Ethnicity—Single District Sample

	African-American			*Latino/Hispanic*		
Characteristic	*Graduation*	*Attend College*	*Attend 4-year*	*Graduation*	*Attend College*	*Attend 4-year*
Demographic						
Male	-.4842	-.2121	.3389	-.0765	-.0150	-.2354
	(.206)	(.178)	(.193)	(.306)	(.237)	(.299)
School						
A	-.6553	-.6522	-.3512	-.8907	-.4648	-.7238
	(.313)	(.244)	(.243)	(.562)	(.481)	(.625)
B	-.3522	-.6218	-.3212	-.2204	-.2363	-1.350
	(.344)	(.262)	(.261)	(.469)	(.262)	(.460)
C	-1.041	-.8079	-.1456	-5.178	6.398	-4.842
	(.396)	(.325)	(.337)	(17386)	(17386)	(19081)
D	.1804	.2804	.3712	.0553	-.4155	-1.229
	(.367)	(.294)	(.268)	(.576)	(.454)	(.612)
E	-.9673	-.3961	-.0822	-.0624	-.0928	-.4901
	(.331)	(.274)	(.269(	(.647)	(.492)	(.593)
Student Characteristics						
Mom and Dad at 14	.1835	.0737	.1347	.8171	.4562	.0703
	(.211)	(.169)	(.170)	(.300)	(.333)	(.327)
English first Language	-5.035	-5.365	-6.719	-.1774	-.4823	-1.338
	(13838)	(8388)	(9289)	(.418)	(.333)	(.535)
Take Achievement Test	-.2057	-.6421	-.3012	.3029	-.0965	.0251
	(.193)	(.163)	(.163)	(.298)	(.005)	(.279)
High School Attendance	.0261	.0196	.0223	.0204	.0026	.0173
	(.004)	(.004)	(.005)	(.007)	(.005)	(.009)
Program						
Career Academy	.7457	.3691	.4389	.1691	.4335	.5645
	(.269)	(.207)	(.208)	(.331)	(.265)	(.335)
Academic	.4516	.1548	.4152	1.076	1.124	.9085
	(.251)	(.202)	(.204)	(.652)	(.452)	(.463)
Vocational	-.4351	-.0746	-1.012	-.0015	-.3428	-.2116
	(.367)	(.347)	(.638)	(.737)	(.554)	(.724)
Intercept	4.506	5.1255	4.597	-1.143	.0096	-1.323
N		360			151	

C: English—Single District Sample

	Native English Speaker			*Not Native English Speaker*		
Characteristic	*Graduation*	*Attend College*	*Attend 4-year*	*Graduation*	*Attend College*	*Attend 4-year*
Demographic						
Male	-.3268	-.1658	-.1775	-.1712	-.2795	-.4077
	(.175)	(.145)	(.148(	(.212)	(.153)	(.164)
African-American	.1140	-.0053	-.1930	5.1773	5.166	6.696
	(.234)	(.186)	(.172)	(13595)	(8648)	(10143)
Latino	-.3357	-.6678	-1.0966	-.1265	-.6926	-.5165
	(.377)	(.308)	(.411)	(.316)	(.232)	(.253)
Asian	4.635	5.524	.6233	-.0124	-.6076	-.1645
	(8672)	(8658)	(.776)	(.293)	(.197)	(.195)
School						
A	-.7320	-.7761	-.5385	-1.296	-.4572	-.4206
	(.270)	(.218)	(.224)	(.537)	(.441)	(.558)
B	-.3593	-.5770	-.6090	-.5685	-.3552	-.6470
	(.284)	(.220)	(.231)	(.388)	(.269)	(.295)
C	-1.137	-.9863	-.3006	-.1440	.0220	-1.184
	(.365)	(.305)	(.316)	(1.172)	(.793)	(1.016)
D	.0651	-.1635	-.1187	-.0518	-.2353	-.3551
	(.288)	(.213)	(.203)	(.329)	(.222)	(.211)
E	-1.113	-.4884	-.1537	.2225	.01762	.2170
	(.262)	(.223)	(.210)	(.449)	(.326)	(.310)
Student Characteristics						
Mom and Dad at 14	.5069	.2614	.1462	.3412	.0552	.3719
	(.181)	(.143)	(.143)	(.227)	(.183)	(.211)
Take Achievement Test	-.2339	-.6214	-.3205	.3446	-.0248	.2275
	(.168)	(.140)	(.133)	(.209)	(.153)	(.159)
High School Attendance	.0237	.0154	.0196	.0230	.0121	.0210
	(.003)	(.003)	(.004)	(.004)	(.003)	(.006)
Program						
Career Academy	.8736	.6114	.4301	.3250	.1626	.5041
	(.237)	(.181)	(.171)	(.298)	(.218)	(.241)
Academic	.5349	.3493	.4903	.5722	.2637	.2308
	(.218)	(.168)	(.161)	(.406)	(.240)	(.230)
Vocational	-.4658	-.1745	-1.022	-.1876	-.2251	-.5139
	(.337)	(.315)	(.587)	(.398)	(.341)	(.458)
Intercept	-.5486	.0056	-1.572	-.6249	.4676	-1.8286
N		530			443	

D: Gender—National Sample

	Males			Females		
Characteristic	*Graduation*	*Attend College*	*Attend 4-year*	*Graduation*	*Attend College*	*Attend 4-year*
Demographic						
African-American	.1525	-.1163	-.0722	-.1288	.3079	.1865
	(.305)	(.188)	(.200)	(.317)	(.186)	(.174)
Hispanic	.2079	-.2098	-.3730	-.6126	-.1655	-.3862
	(.275)	(.190)	(.202)	(.304)	(.192)	(.200)
Asian	.1172	.2983	.2945	.0314	.2473	.1111
	(.414)	(.288)	(.244)	(.427)	(.241)	(.203)
School						
ADA	.0175	.0032	.0104	.0261	.0100	.0315
	(.020)	(.015)	(.015)	(.120)	(.103)	(.013)
Percent Black	-.0166	-.0280	.0001	.0018	-.0007	.0021
	(.013)	(.010)	(.006)	(.009)	(.005)	(.005)
Percent Hispanic	-.0212	-.0271	.0021	.0054	.0030	.0069
	(.014)	(.010)	(.007)	(.009)	(.006)	(.005)
Percent White	-.0088	-.0254	-.0001	.0015	.0012	.0018
	(.013)	(.010)	(.006)	(.009)	(.005)	(.004)
Percent LEP	.0063	.0032	-.0058	-.0028	-.0053	-.0077
	(.005)	(.004)	(.004)	(.005)	(.004)	(.004)
Percent Free Lunch	.0036	-.0040	-.0035	.0082	-.0057	-.0021
	(.005)	(.004)	(.004)	(..006)	(.003)	(.003)
SFR	.0443	.0059	-.0153	-.0202	-.0110	-.0560
	(.024)	(:015)	(.015)	(.025)	(.015)	(.014)
Size	.0002	-.0001	.0002	-.0002	.0001	.0002
	(.0002)	(.0001)	(.0001)	(.0002)	(.0001)	(.0001)
Student Characteristics						
Mom and Dad at 14	.4303	.2422	.0737	.2901	.2118	.2481
	(.176)	(.117)	(.125)	(.198)	(.118)	(.116)
English first Language	-.0711	-.0368	.0384	-.2156	-.0234	-.0424
	(.256)	(.187)	(.195)	(.262)	(.174)	(.170)
Take Achievement Test	.3559	-.0172	.1104	-.3524	.1764	.0767
	(.281)	(.234)	(.250)	(.393)	(.227)	(.233)
Program						
Academic	.4569	.8146	.8471	.9344	.8066	.8667
	(.246)	(.124)	(.122)	(.244)	(.124)	(.112)
Vocational	.0403	-.0541	.1274	.2701	-.2542	-.593
	(.246)	(.157)	(.189)	(.232)	(.145)	(.185)
Intercept	1.709	2.419	-1.900	.4132	-.6056	-3.141
N		651			758	

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E: Ethnicity—National Sample

	African-American			*Latino/Hispanic*		
Characteristic	*Graduation*	*Attend College*	*Attend 4-year*	*Graduation*	*Attend College*	*Attend 4-year*
Demographic						
Male	-.1785	.6311	-.3329	-.0080	-.2940	-.2443
	(.295)	(.176)	(.170)	(.206)	(.154)	(.187)
School						
ADA	.0483	.0115	-.0040	-.0021	-.0003	.0154
	(.034)	(.022)	(.022)	(.024)	(.019)	(.022)
Percent Black	.0249	-.0374	-.0307	.0113	-.0073	.0128
	(.025)	(.022)	(.017)	(.013)	(.011)	(.014)
Percent Hispanic	.0172	-.0367	-.0250	.0117	-.0087	.0051
	(.031)	(.026)	(.021)	(.013)	(.010)	(.013)
Percent White	.0350	-.0350	-.0351	.0086	-.0071	.0093
	(.027)	(.022)	(.018)	(.014)	(.011)	(.014)
Percent LEP	.0191	.0075	-.0138	-.0018	-.0034	-.0048
	(.018)	(.007)	(.009)	(.005)	(.004)	(.005)
Percent Free Lunch	-.0027	.0095	-.0055	.0090	-.0035	.0110
	(.009)	(.005)	(.005)	(.006)	(.005)	(.006)
SFR	-.0348	.0168	-.0353	.0300	-.0350	.0526
	(.042)	(.025)	(.024)	(.029)	(.021)	(.026)
Size	-.00002	.00003	.0002	.0001	.0002	.0005
	(.0002)	(.0001)	(.0001)	(.0002)	(.0001)	(.0002)
Student Characteristics						
Mom and Dad at 14	.2995	.2009	.1260	-.2927	.1458	.3291
	(.317)	(.176)	(.170)	(.255)	(.173)	(.212)
English first Language	.495	.3029	.0279	-.1768	.1541	.1928
	(.821)	(.616)	(.637)	(.216)	(.162)	(.201)
Take Achievement Test	-.0975	.0444	-.1238	.0321	.1312	.1890
	(.455)	(.282)	(.284)	(.432)	(.332)	(.388)
Program						
Academic	.7182	.5365	.7472	.5857	.9273	1.213
	(.355)	(.203)	(.191)	(.257)	(.181)	(.208)
Vocational	.4202	-.2812	-.0306	.1356	-.0103	-.1213
	(.375)	(.212)	(.231)	(.257)	(.211)	(.208)
Intercept	-5.462	3.402	3.481	1.891	1.1038	4.236
N		280			321	

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E: English—National Sample

	Native English Speaker			Not Native English Speaker		
Characteristic	*Graduation*	*Attend College*	*Attend 4-year*	*Graduation*	*Attend College*	*Attend 4-year*
Demographic						
Male	-.2378	-.3649	-.2075	-.2441	-.2628	-.2333
	(.146)	(.087)	(.086)	(.259)	(.211)	(.183)
African-American	.0296	.1204	.0773	-.1048	-.4574	-.0475
	(.234)	(.127)	(.135)	(.879)	(.876)	(.773)
Hispanic	-.2120	-.1133	-.2887	.3027	-.7643	-.6896
	(.234)	(.161)	(.168)	(.423)	(.441)	(.366)
Asian	-.2771	.1620	.1897	.8605	.1108	.0716
	(.361)	(.239)	(.201)	(.563)	(.496)	(.372)
School						
ADA	.0350	.0101	.0269	-.0340	-.2297	-.0082
	(.016)	(.011)	(.012)	(.029)	(.023)	(.020)
Percent Black	.0020	.0002	.0067	-.0265	-.0215	-.0058
	(.008)	(.005)	(.005)	(.021)	(.011)	(.007)
Percent Hispanic	.0021	.0026	.0084	-.0293	-.0211	-.0018
	(.008)	(.006)	(.006)	(.020)	(.011)	(.007)
Percent White	.0042	.0022	.0052	-.0267	-.0184	-.0043
	(.008)	(.005)	(.005)	(.021)	(.010)	(.005)
Percent LEP	.0022	.0030	-.0032	.0028	-.0050	-.0109
	(.005)	(.004)	(.004)	(.006)	(.005)	(.005)
Percent Free Lunch	-.0105	-.0072	-.0061	.0007	.0018	.0056
	(.004)	(.003)	(.003)	(.008)	(.006)	(.005)
SFR	-.0400	.0064	-.0306	-.0159	-.0369	-.0736
	(.020)	(.012)	(.012)	(.034)	(.003)	(.025)
Size	.0003	.00002	.0001	.00008	.0001	.0003
	(.0001)	(.0001)	(.0001)	(.0002-	(.0002)	(.0002)
Student Characteristics						
Mom and Dad at 14	.3753	.2595	.1796	.8605	.0053	.1036
	(.151)	(.091)	(.092)	(.563)	(.241)	(.219)
Take Achievement Test	.0264	.0334	.0982	.1860	.3980	.2435
	(.272)	(.193)	(.206)	(.277)	(.352)	(.312)
Program						
Academic	.7437	.8387	.8875	.4758	.7052	.8346
	(.179)	(.098)	(.147)	(.301)	(.242)	(.203)
Vocational	.2818	-.0858	-.3769	.0971	-.3679	-.2793
	(.197)	(.119)	(.147)	(.342)	(.280)	(.293)
Intercept	.5814	.7271	-3.378	6.156	5.111	1.0103
N		1109			300	

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School of Business and Economics
California State University, Hayward
Hayward, California 94542-3068

510-885-3191 (voice)
510-885-2602 (fax)

http://www.hire.csuhayward.edu